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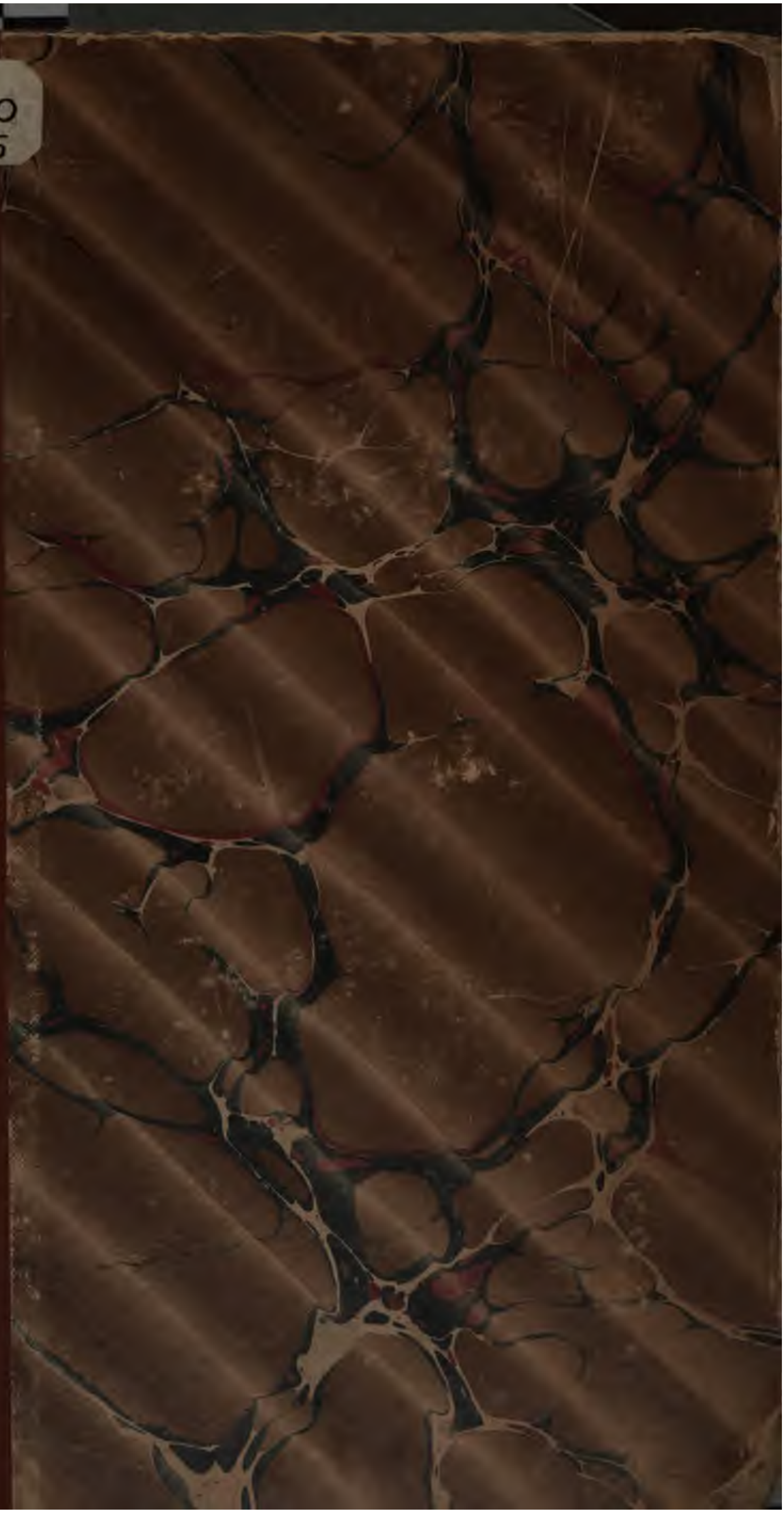

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EVOLUTION.

A LECTURE

BEFORE

THE 19TH CENTURY CLUB.

MAY 25, 1886.

—) BY (—

NOAH PORTER, D.D., LL.D.,
EX-PRESIDENT OF YALE COLLEGE.

HERBERT L. BRIDGMAN,
55 PARK PLACE, NEW YORK,
1886.

THE
NINETEENTH CENTURY CLUB.

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NEW YORK, 1886.

The Nineteenth Century Club.

LECTURES AND DISCUSSIONS.

FIRST SEASON.—1883.

1. January 9th, - - Mr. COURTLANDT PALMER.
"The Nineteenth Century Club—Its Scope and Object."

2. January 23d, - - - Mrs. JULIA WARD HOWE.
"Reminiscences of Emerson and Longfellow."
Discussion by:
Rev. M. K. Schermerhorn, Dr. L. Baralt,
Col. Frederick A. Conkling, Mr. T. B. Wakeman.

3. February 7th, - - - Mr. HENRY GEORGE.
"Ireland and the Land Question."
Discussion by:
Mr. Chas. Moran, Mr. Bronson Murray,
Mr. Louis F. Post, Mr. F. B. Thurber,
Col. F. A. Conkling.

4. February 20th, - - - Rev. Dr. J. H. RYLANCE.
"Free Thought."
Discussion by:
Rev. Dr. J. P. Newman, Prof. Felix Adler,
Mr. Dwight H. Olmstead, Rev. J. B. Wasson,
Rev. M. K. Schermerhorn.

5. March 6th, - - - Prof. WM. G. SUMNER.
"Sociology."
Discussion by:
Prof. H. H. Boyesen, Prof. Isaac L. Rice,
Mr. T. B. Wakeman.

6. March 20th, - - - Mr. JULIAN HAWTHORNE.
"The Novel."
Discussion by:
Mr. Brander Matthews, Mr. W. H. Bishop,
Rev. Chas. H. Eaton, Dr. L. Baralt.

7. April 3rd, - - - - Mr. JAMES PARTON.
"The Coming Man's Religion."
Discussion by:
Rev. Mr. Sampson, Rev. Mr. Mallory,
Mr. T. B. Wakeman.

8. April 17th, - - - Dr. O. W. HOLMES.
"Emerson."
Discussion by:
Mr. Parke Godwin, Hon. John Bigelow,
Hon. Chauncey M. Depew.

SECOND SEASON.—1883-1884.

1. December 5th, - - - Mr. GEO. W. CABLE.
"The Ideal Life of the Modern Fictionist."
Discussion by:
Mr. J. Herbert Morse, Dr. L. Baralt,
Rev. John W. Chadwick.

2. December 18th, - - Rev. Dr. J. P. NEWMAN.
"Buddhism."
Discussion by:
Rev. M. K. Schermerhorn, Dr. W. A. Hammond,
Rabbi G. Gottheil, Col. F. A. Conkling.

3. January 8th, - - - Hon. GEO. C. BARRETT.
"The American Drama."
Discussion by:
Mr. H. H. Boyesen, Rev. J. B. Wasson,
Mr. Cazauran, Hon. Chauncey M. Depew.

4. January 22nd, - - Dr. CHARLES WALDSTEIN.
"The Position of Temperament in Artistic Creativeness."
Discussion by:
Mr. F. Hopkinson Smith, Mr. F. Korbay,
Mr. Louis Von Eltz, Mr. W. J. Stillman.

5. February 5th, - - - MGR. CAPEL.
"The Catholic Church."
Discussion by:
Rev. Dr. Pullman, Rabbi G. Gottheil,
Mr. T. B. Wakeman.

6. February 20th, - - - Mr. PARKE GODWIN.
"The Objects and Limits of Science."
Discussion by:
Mr. Andrew Carnegie, Rev. Wm. Lloyd,
Mr. T. B. Wakeman.

7. March 4th, - - - Dr. W. A. HAMMOND.
"The Use and Abuse of the Brain."
Discussion by:
Mr. Wm. M. Ivins, Dr. E. C. Spitzka,
Rev. Dr. Maynard, Mrs. D. G. Croly.

8. March 19th, - - - Dr. LEOPOLD DAMROSCH.
"Music in America."
Discussion by:
Mr. H. E. Krebiehl, Prof. I. L. Rice.

9. April 1st, - - - - Mr. T. B. WAKEMAN.
"Goethe's Faust."
Discussion by:
Rabbi G. Gottheil, Prof. Werner.

10. April 15th, - - - Hon. NOAH DAVIS.
"Marriage and Divorce."
Discussion by:
Mr. D. G. Thompson, Mr. F. R. Coudert.

11. April 29th, - Mrs. ELIZABETH CADY STANTON.
"Influence of Christianity on Women."
Discussion by:
Rev. Anna Oliver, Rev. Phebe H. Hannaford,
Mrs. Courtlandt Palmer.

12. May 13th, - . - Mr. JOHN SWINTON.
"Social Contrasts."
Discussion by:
Hon. Chauncey M. Depew, Mr. F. B. Thurber.

THIRD SEASON.—1884-1885.

1. November 11th, - - Hon. THEO. ROOSEVELT.
"Spirit of Republicanism."
Discussion by:
Mr. F. R. Coudert, Mr. H. E. Deming,
Mr. Courtlandt Palmer.

2. December 2nd, . - - Hon. T. W. HIGGINSON.
"Aristocracy of the Dollar."
Discussion by:
Mr. Andrew Carnegie, Rev. Wm. Lloyd,
Mr. John Swinton.

3. December 22nd, - - Mr. JULIAN HAWTHORNE.
"English and American Society."
Discussion by:
Hon. C. M. Depew, Hon. Geo. C. Barrett,
Mr. Felix Moscheles.

4. January 13th, - - Hon. ABRAM WAKEMAN.
"The Solid South."
Discussion by:
Hon. A. S. Sullivan.

5. February 3rd, - Mr. GEO. EDGAR MONTGOMERY.
"Poetry and Science."
Discussion by:
Mr. Felix Adler, Mr. T. B. Wakeman.

6. February 24th, - - President CHAS. W. ELIOT.
"In a University the Student must choose his Studies
and govern himself."
Discussion by:
Rev. Dr. James McCosh.

7. March 17th, - - - Rev. Dr. J. D. BEUGLESS.
"Cremation."
Discussion by:
Rev. Dr. N. Maynard, Mr. Andrew Carnegie.

8. April 7th, - - - Mr. DANIEL G. THOMPSON.
"Moral Evil; its Causes and Cure."
Discussion by:
Rev. Theo. C. Williams, Rev. Dr. Edward McGlynn.

FOURTH SEASON.—1885.-86.

1. November 17th, - - Mr. FRANCIS B. THURBER.
"Our Country."
Discussion by:
Mr. S. E. Shevitch, Mr. Frederic R. Coudert,
Hon. Theodore Roosevelt.

2. December 9th, - - - Rev. H. R. HAWEIS.
"Wagner."
Discussion by:
Col. J. H. Mapleson.

3. December 29th, - - Prof. THOMAS DAVIDSON.
"The Missing Social Link."
Discussion by:
Hon. E. P. Wheeler, Mr. Henry George,
Dr. W. A. Hammond.

4. January 19th, - - - Rev. WM. LLOYD.
"The Failure of Agnosticism."
Discussion by:
Mr. Felix Adler, Rev. Dr. Edward McGlynn.

5. February 3rd, - - President CHAS. W. ELIOT.
"The Place Religion should have in a College."
Discussion by:
Rev. Dr. Jas. McCosh.

6. March 3rd, - - - Prof. JOHN FISKE.
"The Destiny of Man in Relation to the Idea of God."
Discussion by:
Hon. C. M. Depew, Mr. T. B. Wakeman.

7. March 23rd, - - - Gen. HORACE PORTER.
"Comparative Usefulness of Man and Woman."
Discussion by:
Miss Kate Field, Mrs. Dr. Jacobi,
Mr. Moncure D. Conway.

8. April 13th, - - - Rev. C. H. EATON.
"The Press."
Discussion by:
Mr. John Foord, Mr. S. H. Nichols,
Mr. Franklin Ford.

9. May 4th, - - Mr. F. HOPKINSON SMITH.
"Realism and Impressionism in Art."
Discussion by:
Mr. J. W. Alexander, Mr. Clarence Cook,
Mr. W. A. Coffin.

10. May 25th, - - Rev. Dr. NOAH PORTER.
"Evolution."
Discussion by:
Prof. H. Newell Martin, Prof. Edward S. Morse.

EVOLUTION.

A LECTURE

READ BEFORE THE

NINETEENTH CENTURY CLUB,

IN THE CITY OF

NEW YORK, MAY 25, 1886,

—BY—

NOAH PORTER, D.D., LL.D.,

EX-PRESIDENT OF YALE COLLEGE.

———:O:———

HERBERT L. BRIDGMAN,
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EVOLUTION.

The first thought which occurs to the writer takes the form of a question—whether Evolution itself has not become so trite and time-worn as to be wearisome to all classes of thinkers and readers, and whether for this reason it were not better for all parties to leave it for a time and turn to some other topic;—whether both theologians and scientists have not become tired, the one of criticising and assailing and the other of explaining and defending it.

This suggests another question in the opposite direction; and that is: whether such a lull in the conflict be not the best time to determine how the contest stands; whether, as the smoke lifts and the cannonading pauses over the field, we may not be in a better condition to estimate what each of the parties has gained or lost, and (which is of greater moment) what is to be the final issue.

In both these thoughts, I have assumed that the subject with which we have to do is not evolution as such, in any of its protean forms, but evolution as it is related to Christian theism. Evolution as a theory, fact or law, must stand or fall by its appropriate evidence, whatever that evidence may be, and whatever is its subject matter;—whether it concerns the production of a new variety of pigeons or grape vines, of cabbages or race horses, or whether it is supposed to explain the arrangements of the planetary system, and to say the last word concerning the origin of the universe. Were the doctrine limited to subject matters of this sort, even the highest and most comprehensive, and did it involve no consequences and hold no relations to Christian theism, or even to natural ethics, we might leave it to the schools of science. Or, if we should contend that it could not be limited to science as such, but, in some of its forms at least, must involve, if it did not constitute, a philosophy or metaphysics, we might still be contented to leave it to the scientists and philosophers, to settle between themselves first, to which domain each question belongs, and subsequently, how each question should be determined according to the received methods and laws of science or philosophy, one or both.

But evolution, as it is commonly understood, is more than a scientific or philosophical theory. It concerns itself, in fact, with Christian theism and Christian ethics and all those conceptions of polity and jurisprudence on which Christian nations stand and from which Christian civilization has been nurtured. When we say this, we do not mean the theism, the ethics, the polity, the law, and the civilization which Christianity has created or modified or colored, but the theism and ethics and sentiment with which Christianity begins, which Christianity assumes and embodies as axiomatic truth, and to which it appeals as the inspirer of human affection and hope. If what is now popularly known as evolution shall become the prevailing philosophy, then these faiths, these feelings, and the conduct and character which they inspire, and, to some extent, the principles and institutions which they have sustained, must be abandoned forever by man and for man.

The position so often taken, that the doctrine of evolution is one with which theologians need not concern themselves, but should leave to the scientists and philosophers to decide, is a position which cannot be maintained, so long as evolution teaches or implies an atheistic philosophy, a materialistic psychology, or a sociological ethics.

We are well aware that the term evolution is used in several senses, and in limited applications; and in some of these senses and uses it is sound in philosophy, true in science, and not only harmless but wholesome in theology.

Evolution or development, in their noblest and fullest signification, as we shall show in place, may spiritualize nature, ennoble man, and honor God. The evolution which we criticise is a composite of scientific theories, some true, others doubtful, and others false, which are held together and wrought into a fanciful philosophy by the very slenderest threads of analogy and elevated into a negative theology by a daring flight of professedly modest or agnostic reserve. It is the logic of this system with which we have to do—the logic of its separate constituents, and of the bonds which unite these constituents into the semblance of a coherent theory. These several elements we propose to consider, both separately and in combination. In presenting these elements we shall seek to follow the order of time and of thought after which they have successively come into form or being, or, to use the more technical language, have been evolved or developed. We shall show how one has suggested or produced another. This method will enable us to understand how the theory as a whole came into being, which of these successive growths is weak and which is strong, and whether the whole or any considerable portion of the accepted result is a coherent and trustworthy product of human thought.

1. As the first of these elements, we name Darwinism, or the doctrine of the variableness of species under the operation of the struggle for existence and the survival of the fittest. The theory is perfectly legitimate as an hypothesis, and is supported by the unquestioned and unquestionable presence and operative force of the two tendencies or laws to which Darwin attached supreme importance. That there is in every living germ a capacity and tendency to vary from the parent, may be conceded as true, without any theory as to how much environment may have to do with the matter. The facts Darwin collected with such patient industry and described with such consummate skill, by no means carry the conclusion that these forces are sole or supreme, in determining the origin of species. One may go a long way with Mr. Darwin and yet fail to accept the special conclusion, which seems to

have been a mere piece of guess-work with him, that the origin of plant and animal life began with the three or four species, to which he accords the special dignity of coming from the hand of the Creator. The tendency to vary, as such, it should be observed, is, when strictly contested, an utterly unscientific factor, being neither conceived nor expressed in any definite relations of quantity or quality, and being therefore susceptible of any application or estimate which fancy may suggest. The same is true of the influence or modifying force of circumstances. It certainly cannot be unscientific on the one hand to recognize these agencies of environment as real, and, in a sense, mensurable agencies, and also to concede to this variable and indefinite tendency to vary all the potency for which it may be worth, and yet on the other hand to refuse to acknowledge that these two are the only factors or even the leading factors in the production of species. It is no matter of wonder, therefore, that some very eminent scientists who accept the doctrine of the variability or transformation of what were formerly called species, within certain limits and those pretty widely extended, do not accept the operation of environment and the survival of the fittest as the sole or prominent agencies which originate or modify species.

That Darwin's doctrine is perfectly consistent with theism, is put beyond all question by the well-known fact that Darwin himself asserted his belief in an intelligent Creator. It is equally evident that he directly and indirectly recognized the indications of purpose and adaptation in the phenomena which he so brilliantly describes, and which indeed his special theory so eloquently suggests and confirms.

But every theory must stand or fall by the verifying experiment, or such a number and variety of indications as may be fairly taken as the equivalent of experiment or fact. The Darwinian theory, however strongly it may recognize certain forces and definitely estimate the laws of their action, must still be judged of by the scientific test. The evidence of the actual organization within the historical period of what is universally accepted as a single new species (i. e., the evidence of experiment or fact), under the Darwinian law or any other law, is generally allowed to be very scanty and indecisive. The proof is indeed abundant that surprising changes have been wrought by artificial breeding, conspicuously in the instances of pigeons, race-horses, and swine, and various vegetables and flowers. It is equally beyond dispute that under certain natural conditions of special isolation, in which a special concentration and intensification of certain factors have found a confined and segregated arena, brilliant exemplifications have been exhibited, of the tendencies or forces which are the hope of the Darwinian theory. But all that is proved by these experiments is that, under these specialized circumstances, the anticipated results are produced up to a certain limit. We admit that this would suggest that possibly these forces might be so adjusted as to overcome any conceivable limits in any of these directions, viz.: as from a pigeon to breed ostriches and eagles, or the albatross and the penguin. But man cannot try these experiments with success beyond certain limits. The indications must take the place of experiment, and in order to do so must be manifold and decisive. Mere analogy and guess-work cannot supplement either. Experiments carry us in a certain direction for a certain distance. Analogy founded on probabilities points us onward, and gives us wings to follow; but analogy, so far as it is founded on fact and other indications, sternly bids us halt. It avails us but little to learn from Darwin that there may be an ample force in reserve, which tends to indefinite variation, and which might be called out by a special environment. To all this the stern logic of science replies, *There may be, but is there?* What is the evidence? There may be an indefinite tendency to vary, indeed, and there may be also a prevailing tendency to return to an original type. Is there not abundant evidence of the one as truly as of the other? The one as an hypothesis is as legitimate as the other. The question with which we are concerned is the question of fact as supported by evidence. The only evidence possible is that of analogy founded on indications. The practical commonsense of mankind and the sagacious tact of most naturalists has usually decided in one direction, and that is, that under the present conditions or laws of being, within the historic period, the limits of well-defined species have never been and are not likely to be changed.

Our limits will not allow us to discuss the nature of species and the foundation of classification in the sciences of nature. The questions which may be asked concerning this topic were discussed by the Schoolmen, and also by Locke, in a more concrete method, before the days of Darwin. We are limited to the logic of Darwinism, and the evolutionists may not wander farther. The thoughtful student of Locke's Essay (Book III., Chap. 6) will find that Darwin did not utter the first word upon this question, even if he thinks he should have the last.

2. From the historic we turn to the prehistoric period, i. e., from the observations and experiments of man and nature, as observed and recorded by himself, to the experiments of nature as recorded upon the rocky strata, and as these were laid down in geologic times. And what do we find ? We find a series of periods of undetermined length brought side by side, within a single field of view, presenting vivid pictures and distinct inscriptions, which give decisive and overwhelming evidence that, from one period to another, there has been a gradual advance from the simpler to the more complicated forms of life, both vegetable and animal. But concerning the processes or agencies by which the simpler have risen to the more complex, the record gives no answer. From the nature of the animals and vegetables, and their relations to one another, the evidence which is furnished is no stronger and no weaker, that new species have been evolved from the old solely by the Darwinian processes

and under the Darwinian conditions, than that similar changes have taken place within the historic period. The records and testimony of prehistoric ages differ from those of the historic in this, that its periods were longer, the agencies were more gigantic, and the action may have been more energetic. As to whether the transitions were more sudden, we cannot decide. The periods which seem to be brought closely together by the seeming juxtaposition of their remnants and records may have been separated by long intervening periods of time. What other agencies may have appeared on the scene than those provided by Darwin's indefinite tendency to variation and a favoring or hostile environment—whether these agencies were roused to an intensified energy, or developed unsuspected instrumentalities, or whether a higher than natural force may have added a supernatural element—is not in evidence. Science, as such, does not know the supernatural. She limits herself to natural agencies and natural laws. When she completes her explanation of phenomena by means of these, she may explain the agencies and laws by spiritual or natural forces and operations, but in so doing she thinks in no higher than scientific relations. Science observes the facts; and if she cannot show her verifying experiments within the historic period, she cannot find them within the prehistoric age. So far as she is advised as yet, she cannot assert, however confidently she may conjecture, that all these varying and heightened forms of life have been produced by the operation of environment upon a more or less indefinitely susceptible and variable species. And here she is left by the inexorable law of induction.

3. Under a sense of this defect, the evolutionist resorts to biology and the analogies which it is supposed to suggest. Perhaps it would be more fair to say, if he knew how to put his own case in the strongest form, that he would urge that experimental proof is not to be looked for, but only indications of a peculiar character. But these, he would say, are so manifold, so striking, so cumulative, as to be better

than facts, and more decisive than experiments. These biological analogies present themselves in both the prehistoric and the historic ages. In the prehistoric period the several forms of life, both animal and vegetable, which exist side by side at present, from the highest to the lowest, from the protean forms up to the human, lie buried in the geologic strata in an order of time which is co-incident with the order of their complexity of structure and function. This indicates, it is urged, that they came into being in a succession corresponding to their physiological dignity. If now there were evidence from other sources that, by the processes of natural descent, the more complicated can be generated from the simpler, by any law of natural evolution, it is rational to believe that this law held good of the successive generations which emerged into being upon the geologic arena during the unmeasured æons which preceded the appearance of man. This we grant.

That this method of generation is probable, the biologist urges from the actual changes which the historic period records, whether or not the Darwinian explanation of these changes be correct. In proof of this, he makes much of the existence of rudimentary organs, in the higher species of animals, and which he contends give positive evidence of a great number of intermediate members or links in the great chain of progressive development which have left no remnants or traces behind.

The existence of these rudimentary organs is not denied. That they indicate and tend to prove something, is evident. That they prove a unity of plan or of thought, of beauty and order, in the production of the wondrous kosmos of animal life, including a dramatic order in the introduction of its families and groups, cannot be denied. That they would be consistent with the doctrine of evolution by favoring and continued environment, provided this were established on other decisive grounds, is also true; but they bring more difficulties than aid to this theory, inasmuch as the critic asks at once, If the movement of evolution were so widespread and long continued, why are not these broken links more numerous? There ought to be thousands of these rudimentary organs where there is one; inasmuch as, if this theory is true, nature must have tried myriads of experiments, and left the evidence of them in thousands of broken records. But of such broken records there are relatively few, i. e., relatively to the myriads which the free and universal operation of evolution by environment and impressible material would require.

Another argument of the biologist is founded on the observation of embryos or germs in their progressive stages, each of which is supposed to represent some one of the progressive types of life. This is especially conspicuous in the animal world. Thus the human embryo, as it is contended, furnishes in its growth a miniature transcript of the order in which animal life has been evolved through its several stages, from the lowest up to man. Here again there is no agreement as to the facts; some contending that the transition from one stage of the embryo to another, as in the advance from the simpler to the more complex, is a progress from the generic to the specific, or, as the evolutionist would say, from the homogeneous to the heterogeneous. But, admitting this progress, it would be as true of logical as it is of natural growth, and is as consistent with the evolution of a plan which is provided for in the constitution of each individual germ, as it is with the influence of environment upon one indefinitely variable nucleus or cell.

The biologist, so far as he confines himself to the observation of phenomena and keeps clear of all materialistic or metaphysical theories of the nature of life and of growth, of matter and force, adds little strength to the doctrine of evolution as taught by Darwin, or even as taught in some form by Herbert Spencer. While it may be safely said that provided the theory in its more ambitious and speculative forms should be established on its appropriate evidence, it would be consistent with these biological phenomena, it does not follow that these phenomena either suggest or confirm the theory itself. Evolution, as we know it,. is something very far from the modest outcome of any geological observations or biological indications which could possibly be superadded to the Darwinian doctrine of the origin of species or the descent of man. It is not merely a theory of generation or growth of plants or animals. Whatever it may have been at the beginning, it has now become a metaphysical theory of the origination of matter and of spirit—of the universe and of God. How it happened to undergo these transitions, how it was itself evolved into existence, can only be explained by a statement of the doctrine of the conservation of force and of the nebular hypothesis and the conclusions derived from the two by Herbert Spencer and his disciples, by combining these with the Darwinian physiology, and its supposed reinforcement from geology and biology.

4. This brings us to our next topic—the doctrine of the correlation and conservation of force. Without this doctrine, the theory of evolution in its present form would never have been known. And yet it is only within a few years that this theory itself has been broached. Forty years ago heat and light, electricity and magnetism, were called separate imponderable agents, each of which was supposed to manifest itself in its appropriate phenomena under its special laws, although each was known to be convertible into or interchangeable with the others. By a series of brilliant but decisive experiments, all these phenomena were discovered to be modes of motion, the motion of masses and molecules—the two kinds of which being also convertible with one another, and manifest to the senses by their appropriate phenomena. Light could be converted into heat, and electricity could be interchanged with magnetism, according to the density and form of the substances concerned, and the rates and methods of the motions to which, as masses and particles, they were subjected. This was the language used

Thus, a moving cannon ball will glow with the intensest light and heat when its flight is arrested by a target. Consequently, what had previously been supposed to be the brilliant corruscations, or combustion of a mysterious and impalpable fluid, were resolved into the vibrations of particles infinitesimally small and invisible, rapid and peculiar in their rates and directions of movement. In these phenomena there was what was termed the evolution of one so-called agent or force into another, which changes in their turn were distinctly traceable to the minutest particles moving in manifold directions upward and downward, backward and forward, in lines and circles.

To one of these forces, moreover—the so-called galvanic or electro-magnetic—chemical affinities had previously been referred. From this the generalization was quickly reached that all the chemical properties of the so-called chemical agents or atoms are dependent upon and resolvable into the mechanical relations of their constituents. Through this generalization, and by a single bound, as it were, the area of the interchangeability of the forces of matter was at once uncommonly enlarged, and the wondrous and brilliant witchery of chemical phenomena were all resolved into the subtle interplay of molecular activities. Gases and liquids and solids, chemical attractions and equivalents and isomerics, were all taken to be but different phases or modes of motion. By this theory the mystery of substance and attribute, of things-in-themselves and phenomena, becomes as transparent as the light; only adopt the view that the changes in the forms, the places, the rates, and directions of the particles can produce all these effects, and the entire universe of particles and of masses is resolved into the motion of their invisible elements. The interchangeability of one kind of being with another is as orderly and as easily followed as are the movements of the multiplication table. The varieties of inorganic matter with the countless phases of their inactivity arrange themselves as the higher and lower potencies of a common root of matter in motion. Give to this common substratum or root the additional attribute of an upward impulse, a soaring tendency of self-elevating evolution along the ascending steps of material existence, and it will solve all the mysteries of the inorganic universe. If sober heads hesitate to go so far, you have only to persuade them to accept this theory in the modest form of a *working hypothesis*, and it will easily but gradually take the positiveness of an accepted philosophy.

But evolution is not content with subduing to itself the inorganic domain. Why should it be arrested at the mysterious threshold of life? Why may it not presume to cross this threshold? This brings us to our fifth halting place, which proves but a more conspicuous stadium for its more triumphant progress.

5. It is an undisputed fact that the vital processes involve chemical processes, and result in chemical products. Assimilation and excretion, the oxygination and decarbonization of the blood, and many of the most conspicuous vital processes are, in part at least, clearly chemical operations. But it has been demonstrated, as some would say, that the chemical combinations obey the laws, and are solved by the relations, of mechanism, all being ingeniously reduced to modes of motion. It follows, that life itself is but another name for a more complex combination or a higher potence of mechanical agencies, such as the upward tendency from the obviously mechanical to the chemical would suggest. To this view the authority of able physiologists like Lotze and DuBois Reymond, who are far from being thorough-going evolutionists, lends its support.

Against the conclusion that the vital functions and the vital agencies are characteristically or wholly chemical and in the last resort mechanical, the objections are manifold, and would seem to be insuperable. Every living being, even of the lowest type, grows by food prepared by itself and for itself within its cell as simple protoplasm. This food is made ready for vital appropriation by special processes which no chemistry can trace or explain, much less can any mechanics. Every living thing also grows after a plan or a type not only specific, but individual, adhering to it in the minutest particulars, and showing its tenacity most stubbornly even when it is partially overcome. It forms in orderly successions its organs, one after another,—organs which in form are individual, and which, whatever be their structure, when tried by chemical or mechanical tests, perform functions which no mechanical or chemical composition or arrangement can explain. These functions are equally mysterious, whether they are viewed separately and apart; whether they affect the function or form of other organs, or combine towards a result in which all are co-efficients or in turn are acted upon by the effect to which they conspire. Take, for example, the separate or joint action of the kidneys, the liver, the stomach, the lungs and the heart, and, above all, of the brain and nerves, with their mysterious vital activities, to say nothing of their as yet unconsidered but most potent relations to the mental and emotional experiences. To say that the growth of an organism in general, or of an organism of mutually dependent parts and a whole, of organisms within an organism, as the circulatory, the respiratory, and the digestive systems within a single animal—the growth by food prepared by itself—a growth, a general and an individual plan—a growth of organs capable of separate and joint activities partly mechanical and partly chemical and yet more than either,—to say that all these so-called vital functions and products are scientifically or philosophically explained by a highly differentiated mechanical force, is to hypostasize an agency or an agent of the vaguest and most nebulous character, and yet to claim for it all the attributes of things or agents which are known to exist under the severest tests of observation and experiment. To apply induction to a process which ought to begin with analogy and end with fact, but which begins with a surmise, and ends with a dogma, is to reverse the order and to deny the criteria which have given science her authority to prove and philosophy her power to prophesy. If this is science or philosophy, then science has become guess-work after the rudest analogies, and philosophy may be speculation run wild.

The fact should not be omitted here, that while so many physiological evolutionists contend on grounds of theory for the possibility that living beings of a low type should be produced from inorganic elements, very few contend that this wide gulf has ever been known to be leaped, within the historic period. Some of the most positive of those who assert that such a transition *is* because it *must* be possible, are the most positive, if not the most passionate in their *denials* that it has even been known within the historic period to have been in fact. Here and there one such has been found. The very few sanguine experimentalists who profess to have elicited the very lowest forms of life from forms not living, have been mercilessly handled by men who are equally positive if not equally passionate in contending that when we go back to the prehistoric periods, the mighty wave of the evolutionary impulse lifts them above all the difficulties of their post-historic faith. They are well-nigh as confident in respect to the impossibilities of all pre-historic experiments as they are positive in respect to the pre-historic fact. He would be a rash man, says Professor Huxley, who would deny that out of the crucibles and retorts of the next sixty years there will leap living germs, which shall be developed into noble forms of the highest life. And yet no man is more positive than Professor Huxley, that no form of life has as yet leaped the barriers which separate the inorganic from the organic world. Phenomena like these deserve the special attention of those who concern themselves with the logic of the arguments which satisfy many thorough-going evolutionists. They bring into striking relief the fact that a portion of their inductions are founded on broad and it may be treacherous analogies, and seem to vary in effectiveness with the susceptibility of the imagination of those to whom they are addressed.

None of the reasonings on this subject seem more unsatisfactory than those which aim to show that protoplasm or the physical basis or material of life is homogeneous wherever it is found, being the same in brain and bone and tissue, having the same chemical constituents and yet being, as it is contended, capable of being developed into organs whose functional capacities are as diverse as secretion, circulation, sensibility and thought—no variety of material or structure being found which may account for these diverse functions. In order to prove that the common basis for all these operations is material, protoplasm is first subjected to the severest mechanical and chemical tests, and found to be the same in structure, however it acts or whatever it produces, let it breathe, or impel the blood, or assimilate food, or let it feel or think, or let it secrete blood or chyle or gall or the gastric fluid. Similarly, it is contended that protoplasm is the same in its chemical composition, whether it belongs to the lowest or the highest animal, and whether the organ is destined to the lowest or highest office. So long as we are required to prove that difference in function is to be ascribed to the material in the organism, it would seem that some difference in structure should be sought for and found. If structure or material are the same, it would seem that the functions should be the same. Or if every difference in effect or phenomenon is to be referred to supposed differences in motion, the motions should be discovered by experiment. If all these indications fail, the theory should be held as an hypothesis supported by only a vague and scarcely self-consistent analogy.

It scarcely need be suggested that evolution in these, its most adventurous forms, must assume the atomic theory of the matter which it seeks to vitalize. It must go to the extremest length in affirming that the particles of matter are qualitatively alike, and that all this incomputable variety of phenomena can be explained by their insensible motions. In estimating the logical value of its inductions and the plausibility or the weakness of its theories, we may not forget that this is the foundation of the superstructure, without which it is no more substantial than any shapely and brilliant and apparently solid cloud; that it is a theory of structure and activities which is at best a metaphysicial speculation, refusing to be tested by experiment, or in any proper sense to be established by induction.

6. But in spite of our cautions, evolution will take another step upwards, even though it plant its ladder in the clouds and lean it against the sky. Not content with reducing life to chimism, and chimism to mechanism of the nobler sort, it subjects *sensibility* to similar agencies, only of a higher potency. How it can be that nerves and brain can be made to feel and think by any kind of molecular tremblings or crystalline adjustments, or can remember, by a second shiver or re-adjustment, or can create, like Shakespeare or Coleridge, by such brain refinements or positions as were never reached before,—all this is not explained by the evolutionist who professes to believe it but does not attempt to prove it, except by resorting to the ambitious analogies which have hitherto served him so well. He is not content with one ladder against the sky; he must add to it another, and thrust it higher still. He will not only explain the *processes* of thought, but will even explain the finer *materials* of thought, by the subtlest products of nervous energy. He will explain the ultimate relationship of all science—the axioms of mathematics and metaphysics, as the results of physiological processes. All these he will resolve into these attitudes and positions of the brain cells which by repetition have become so permanently fixed and hardened as to be capable of transmission by inheritance as the "organized experiences" of the highly developed human race, in the form of self-evident truths, the axioms of mathematical science, and the unquestioned ultimata of all philosophy.

Ethical truths and relations, it would seem, are still more indirect in their origin, and complicated in their physiological origination, being the fine and stubborn reactions of the brain, under social sympathies and antipathies. The altruistic experiences which somehow find themselves, we know not how, within the arena of man's private experience, naturally secure to themselves the response of man's interested gratitude; *selfism* awakens a natural antipathy. This sympathy and this antipathy, often repeated, become permanently connected with these occasions which excite them in the universal brain by slow but sure adjustments. The unfeigned gratitude in the presence of others, or their displeasure, is soon fixed in the brain reactions. Slowly, but surely, conduct and character are estimated as good or bad, so soon as the brain mechanism has been trained surely and rapidly to connect each act and feeling with the appropriate sentiments of complacency or aversion. For, be it ever remembered, it is only as the brain is evolved into finer differentiations and these differentiations are combined into more complex integrations, that new relations of any kind emerge into human consciousness, and as they are fixed; and because they are fixed by a compact integration, they are clothed with authority as organized experiences of the past which control the future.

What is true of the individual man, is true of the social man. Ethical relations, indeed, according to this theory, must be evolved entirely from social influences, and these must be imbedded in the individual, which by-and-by becomes the universal, brain. This is more conspicuously true of those institutions and relationships which are distinctly recognized as social; as customs, manners, laws, institutions; incident to all of which are progress and improvement. Though these seem to penetrate the atmosphere and brood over the social life of every civilized community, their true and only permanent home is in the improved brain of the highly evolved human individual. As the brain of the individual grows through its response to new and more complicated relations, and as it grows socially by reacting to social forces, so the family and the state, so liberty and law, so wealth and capital, find their transcripts in the finer and more fixed reticulations of the brain of philosopher and peasant, as each becomes more and more deft to respond to the physiological touches which discipline it to new differentiations.

We do not need to suggest again the misgivings which have already been suggested. We do not ask again whether this theory has any scientific validity as tested by the phenomena which it concerns, or any philosophic solidity in the foundations on which it rests; it is quite enough for us to ask whether it is consistent with itself, or whether it is not desperately suicidal and self-destructive. We need only inquire, What is truth according to this theory—what is *knowledge*—what is the ground and evidence of *certainty?* What is the import of the necessary axioms of science and of morals, if their unquestioned authority is explained by the evolutionist as a perfected growth of the brain—after it has outgrown all traces of the individual experiences from which these axioms were derived? We cannot but ask, Is there any place of security provided for objective truth of any kind, or for our confidence in its reality; and this whether the object-matter be science, morality, or social stability and progress? Possibly it might be suggested that the brain is impressed by its object, and we must assume that the one is the correlate of the other, and therefore, when the exciting object and responding brain coincide, we have certain and trustworthy convictions. But how do we *know* this, and why may we assume anything, and what is it to know or to assume anything, if knowledge and conviction themselves are only brain combinations and brain growths, and fixedness by repetition is the only criterion of truth? If this is true, I see not why the doctrine of evolution itself, with its special theories of knowledge, of science, and of faith, may not at any moment take some new form, or vanish into the sky, and why its resolution of all certainty into brain adjustments does not render all certainty a matter of accident and caprice, including the certainty of evolution itself. If this is true, then the ladder, which was thrust up from beneath to rest upon the stars, has ignominiously fallen backwards upon the head of those who aspired by means of it to scale the heavens.

7. If intellectual self-reliance and trustworthiness fail to be provided for by the theory of evolution, much more is this true of personality, with its self-recognition and its self-respect, with its self-approval and its self-reproach, and all the other experiences which pertain to self-consciousness. The theory makes no attempt to explain the fact itself, and apparently would shun the acknowledgement that it is a fact which it ought to recognize and explain,—the highest and last, the most complex and highly evolved of any on the scale of finite existence. So far as its theory can make anything of the ego as an object, it must resolve it into states of feeling which depend on brain actions, and reactions which have been trained to act as one, by the frequency and rapidity of their blended movements. The self-conscious act it resolves into a rapid movement of the brain, which connects a present experience with a remembered series in the past or an anticipated series in the future. What the *past* or the *future* can be, or any of the relations of time which make memory and anticipation possible, it does not feel obliged to ask or to answer. Self-approval and self-reproach are the lively residua of brain combinations, occasioned by the associated sympathy or antipathy of others. Love and hatred to other persons are simple pains and pleasures, associated through the brain with other painful or pleasant brain affections. Every one of these solutions of the experiences which make up the staple of one human life, are too impotent not to challenge our curiosity or to command our respect. It is only when such doughty champions of this theory as, *e. g.*, Mr. G. H. Lewes and Mr. Herbert Spencer, forget their cerebral metaphysics and their cerebral psychology, by analyzing the phenomena of self-consciousness as

attested by human experience,* that they interpret their dreary and otherwise meaningless theories of the by-and interplay of attendant brain movements. Aside from these glowing and absorbing spiritual experiences, the accompanying cerebral conditions are devoid of significance and worth. Connected with these brain theories, they answer no questions, because the brain questions and brain answers are felt to be trivial and unsatisfying, in comparison with those which pertain to what is called "the subjective" side of the phenomena.

8. The argument for the truth of evolution from archæology, in the double form of the history of language and of human development, should perhaps receive a passing notice. These phenomena prove only what no one could ever be supposed to question, viz.: that the human race, so far as we can trace its history, has often, and we may say has very frequently, been changed for the better, and to a certain extent has obeyed fixed and generalizable laws. Such changes may be traced in skill, in manners, in jurisprudence, and in science and arts of every kind. Such changes, so far as they are recorded, are necessarily from the vague to the determinate. They are effected by the substitution of the known and definite for the unknown and the indefinite. The results of this progress are recorded and attested in the languages, the manners, the literature, and the institutions of the race, all of which seem to move by continuous progress from the general to the specific. This law of human progress has, for two or three generations at least, been familiarly styled as human development, and for which has more recently been substituted the open sesame of evolution, let it mean what it will. It is obvious at an instant's thought that the nature of the evolution must be de-

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* Indeed, Mr. Spencer contends: "I have very emphatically expressed my belief in a subjective science of the mind by writing a 'Principles of Psychology,' one-half of which is subjective." "Classification of the Sciences." Appendix, p. 40.

termined by the nature of the material in which the laws operate, after which the progress or development takes place.

9. Having followed the evolutionistic theory thus far, from the earliest geologic period to the production of man and his works, including the culmination of all in a perfected science, a completed ethics, and a consummate society, we may go back to the beginning of the kosmical system, to discover the first beginnings of this mysterious force in the rush of nebulous matter from a rarer to a denser medium, which was followed by arrested and divergent motion, by the emergence of heat, the condensation of material, by revolving planes, by gathered spheres, by splintered satellites, by a confused yet regular succession of strifes and adjustments, till kosmic order at last prevailed, and geologic time began to be measured in the formative successive stages of a habitat for that vegetable and animal life, the elements of which once slumbered in that fiery cloud which first imprisoned the mysterious force which finally broke forth in this wondrous story of order and beauty. We cannot be expected to discuss the nebular hypothesis at length. It is enough that we say, if evolution in its boldest claims and widest applications is true, then the nebular hypothesis is true. The converse does not follow. The nebular theory of the order of the formation of the kosmic system may be true, and evolution in its broadest, and indeed in many of of its narrowest, forms may still be false. So far as there is reason to doubt the truth of the nebular hypothesis, must the doctrine of evolution be held in abeyance. That this hypothesis is not universally accepted in scientific circles is well understood.

It would seem from this condensed statement and criticism of the salient features and the scientific merits of the so-called doctrine of evolution, that it is made up of a few established scientific truths, supplemented by a greater number of mere hypotheses, many of which are dimly conceived, and founded on very vague though it may be imposing analogies. Some of the analogies are clearly limited to narrow spheres. For example, it does not follow, if Darwin's law holds good of *varieties* in plants and animals, that it holds good of *species*, nor if the facts he adduces require us to abandon some of the old lines of demarcation between what were conceived to be species, that *no* lines between species have been fixed by nature, or should be accepted by science. Certainly it does not follow, because mechanical forces are interchangeable with chemical, or even if all chimism is resolvable into mechanism by ingenious hypotheses, that the vital agencies are reducible to either or both. It requires still greater violence to all the *indiciæ* to hold that the phenomena of sensibility and intellect and conscience are only cerebral affections, produced by nervous agencies and obeying nervous laws. It shocks both our philosophical and our common sense to have it suggested, much more to hear it argued, that social institutions, in their growth and controlling laws, are biological in their essence and explanation. We wonder how a doctrine so offensive to both should be entertained for a moment. We can account for it by a gross confounding of logical and material growth, the growth of a plant or animal with the growth of a thought and a feeling, of an institution and a fashion. That there is a community of relationship between the constituent members of every scientific hierarchy or logical tree where such a hierarchy is established, is obvious enough to every student of classification or formal logic. If you follow what you please to call the evolution of the summum genus along the lines of its defining attributes, the genus may be said to bifurcate itself by means of its differential, and this again when united with it to make up or to be integrated into its species, and so on to the end.

When you exhibit or explain any subject matter upon this method, you may be said to create or construct it in thought, or as a thought it may be said to grow under the evolving process. So Fichte is reported to have said, "To-morrow, gentlemen, I shall proceed to create God;" that is, to develop by adding certain additional elements to the concept which we have already, which will give the idea of God. Similarly, Hegel would evolve every variety of abstract conception and of concrete existence of matter and spirit from the ultimate or most highly generalized *abstractum* conceivable by the mind. But it seems passing strange that a solid mathematical Englishman should have committed so gross an error as to suppose that the tree of Porphyry, which figures in the old manuals of logic, could strike root in material soil, and not to have better understood the import of development or *Entwickelung* as used in the school from which he confesses to have borrowed it. The school itself was semi-pantheistic, spiritualizing matter instead of materializing spirit, and was especially distinguished for finding organic and teleological, rather than mechanical relations between the phenomena of matter and spirit. To the philosophers of that school, the world of matter was as luminous as though it were transfigured spirit, and development itself was eloquent in the attestation and illustration of spiritual being and thought. It was in the writings of a physiologist trained in this eminently spiritual and teleological school that Mr. Spencer seems to have stumbled upon the principle which wrought in his mind like leaven, viz.: "the truth that all organic development is a change from a state of homogeneity to a state of heterogeneity." He has the naiveté to confess "this it is from which very many of the conclusions which now I hold have indirectly resulted." If this were so—and there can be no reason to doubt its truth—there never was a profound spiritual truth more ignominiously misinterpreted and more basely perverted to earthly uses. The oversight may have been unconscious on the part of the interpreter, in mistaking a logical relationship for a controlling purpose requiring an intelligence to originate and complete it. Perhaps he was incapable of discerning the difference between a homogeneity in matter, necessarily and blindly tending to a heterogeneity, and such a law of organism, progress, and growth, as requires a spiritual intelligence to originate and maintain it, and a kindred finite intelligence to interpret it. It is enough that we know that the philosophers from whose school he borrowed the term which has made his name so notorious in our English literature, assumed the existence of spirit, or at least of design, as the natural and necessary supplement to the finite universe in which they discerned a plan of progressive thought. It is sad to be obliged to confess that so many naturalists and philosophers who so confidently flaunt this biological atheism as the last word of modern science, do not seem to know either the birth-place or the lineage of the captive whose eyes they must first pluck out before they can compel her to grind in their prison-house!

10. This brings us to our last topic—the relation of evolution to theism. As it is usually conceived and taught, it is no calumny to say it involves atheism in the solutions which it gives of the phenomena of the universe. The history which it gives of the order of this evolution is on this wise: In the beginning there was found in existence an equally distributed homogeneous material force, self-pulsating in an alternate movement of differentiation and integration. Such a persistent force enables science to dispense with the agency of God as being entirely superfluous. One of the earliest of these rhythmic activities was that by which nebulous particles were evolved, as they were found moving from a rarer into a denser medium, in a direction slightly differentiated, from which light and heat ensued, and whereupon subsequently the heavenly bodies found their places and took on their motions. We do not care to raise the question here, whether the hypothesis of a self-existent and self-evolving force, paradoxical as it is, might not in a certain sense account for the facts. Such a theory has the closest affinities with mechanical atheism, which finds in matter and motion the solution of the phenomena of the physical universe and the

so-called phenomena of spirit. Or again, it might seem to have nearer affinities with the pantheistic school, which regards the universe as an organic and therefore a living whole, in which the organs or parts in matter and spirit, and the whole as a completed organism, are reciprocally means and ends, living for one another and by one another as means and ends. Herbert Spencer's materialistic theories and explanations of confessedly conscious phenomena by nerves and brain, would seem to class him among the materialistic atheists, however persistently he protests that as between matter and spirit he rather inclines to spirit. On the other hand, evolution and development must always suggest intelligence and purpose and adaptation, even when consciousness and personality are denied. A believer that the universe is itself a causal force,, which by its own inward impulses is rising to higher and higher forms of phenomena, must necessarily symbolize with the pantheist. When Spencer expounds his own theory of the ultimate or absolute, he tells us that in searching for the causes of phenomena, they blend into one another till finally, or "without any change in the nature of the process, there is reached the consciousness of an universal causal agency which cannot be conceived." This entity when theologically viewed as "the providential action of one being," becomes " the conception of a being immanent in all phenomena." The same idea when reached as the last term of a metaphysical system is "the conception of a single great general entity as the source of all phenomena." But the more general this entity is, the less can it be conceived and defined; hence the less can it be known. Personality, if evolution is true, is the final outcome, the completed result, and in no sense the beginning of a movement which by evolution rises from the abstract to the concrete, and therefore God, whatever or whoever he is, is the farthest from being personal; because the most intensely individual is the farthest extreme from the general or the whole. In this conclusion Spencer comes near to the pantheistic doctrine. It were far more creditable to him had he taken this theory for better or for worse.

11. But instead of proposing or attaining any logical consistency, he resorted to agnosticism—the agnosticism which is at once the *bete noire* of Christian theists, and indeed of all who value their own personality, and the confident rallying cry or the secret creed of multitudes of easy-going religionists among the cultured and the non-cultured classes. Indeed, agnosticism deserves to be called the anti-Christ of this generation, whether it is within or without the Christian church. It is not obvious at first thought how it came to be an off-shoot of evolutionism, especially of the biological metaphysics of Herbert Spencer. On second thought, however, it appears that under the psychologically conceived operation of the law of development, as interpreted by Mr. Spencer, any conceptions of God and the Infinite held by one generation must necessarily be outgrown by the next. If all ideas are dependent on new material, if the very relations and axioms of thought are "the organized experiences of past generations," then, as the ages pass on, new conceptions of God must must give place to the old as the brain material and brain processes become more and more refined. So far as this argument rests on Spencer's biological psychology, it is conclusive to all those who do not turn it against this theory by a *reductio ad absurdum.* To others its plausibility is imposing even when its fallaciousness is exposed. To all classes, even including many who are earnest seekers after God, these suggestions have no little plausibility and force at the present day, and it is not easy either to answer or exorcise them.

The history of agnosticism, and its adoption by Mr. Spencer, is one of the marvels of modern speculation. The logic of his theory, as we have seen, would shut him up to the alternative of being a materialistic deist, or a Spinozistic pantheist, with a halo of mystery derived from the doctrine of evolution. But he was not content with solving the mysteries of science. He must essay to reconcile science with theology. And in doing this he was forced to appeal from the intellect to the feelings, from the speculations of the schools to the court of common sense. And we find him urging that the universal consent of the intellect of mankind,and the universal demand of their feelings requires the belief that there is an object of faith and worship, such as religion conceives. Finding in the writings of Hamilton and Mansel sundry unguarded statements and reasonings to the effect that God cannot be known under the categories of logical knowledge, because these are limited to the finite, he sought to supplement these defects by this new device of his own, borrowed from the intellectual assent and the emotional consent of mankind, and introduces to the wondering admiration of scientists and theologians a God whom they are henceforth to believe in, but can never find, inasmuch as, under the law of evolution, their conceptions of this God must be forever differentiated but can never become complete.

We need use no time in showing how incoherent this theory of agnosticism is with the atheism of evolutionism proper. Its chief plausibility, as well as its most serious evil, lies in its professed demonstration of the essential uncertainty and necessary mutability of all positive religious faith. It is this feature of what is called evolutionism, which invests it with the gravest practical significance, whether it be called a scientific or a theological theory. The doctrine that the great principles of religious and moral truth are necessarily changeable under the operation of evolution, cannot but weaken their authority. The callow pulpit sentimentalist and the veteran pulpit declaimer who take frequent occasion to herald the glories of evolution as the final word of promise and charm in morals and theology, would do well to bethink themselves, before they commit themselves to its teachings and its teachers with indiscriminate credulity or extravagant laudations. The critic who aspires to be the leader of opinion, who ought to know what he writes about, would be wiser as well as more useful were he to hesitate before he asserts so soundly that evolutionism is the established theory of the universe, and the key to history and philosophy, and to morals and government. Both would do well to recollect that paradoxical extremes of opinion prepare the way for sudden and violent reactions, and that evolution as a consistent theory in its logical outcome will sooner or later be found to give a material substratum and material laws for the human spirit; to involve caprice in morality, tyranny in government, uncertainty in science, with the denial of immortality, and a disbelief in the personality of man and of God. It commends itself as immensely plausible to the specialist in science, because it essays to explain the secret of the universe by the formulas which he is most accustomed to handle, and the relations which are as familiar to him as household words. It commends itself equally to the clever and quick-witted Bohemian who is satisfied with a flying look over the universe of space and along the lines of the great movements of history, who sensitively responds to superficial resemblances and imposing analogies, and has no violent objections to a flexible ethics and an easy-going agnosticism. The scientific specialist and the cultured Bohemian are, however, both men; and the needs and faiths of men will sooner or later make themselves to be felt and heard, and often under circumstances when we least expect such a response.

We do not rest our hope of a speedy reaction upon these considerations alone, nor chiefly. Evolution has a better side; so far as it is established as a scientific theory when viewed in its higher forms it brings thought and God into the universe by an axiomatic necessity, it elevates spirit above matter, thought above things, it implies and justifies a purpose in the history of the universe, the origin of which was the spirit of the living God and the accomplishment of which will be the perfection of the living souls who are made in God's image, and can therefore interpret God's thoughts and honor Him by rational obedience, by loyal confidence and reverent worship. As we have already said, the idea of evolution as a progressive force from homogeneity to heterogeneity was borrowed from a school of thinkers who put thought before things, and spirit before matter, and organic relations before slavish mechanism. The attempt to adjust a theory thus denied to the movements of a self-developed and self-moving matter, is, as we have seen, a failure. It can only seem successful by using the largest flexibility in the meaning of terms, and by doing constant violence to scientific and logical consistency. To connect the substance of the floating star dust of a remote æon with the personality and the speculations of the philosopher who discourses so eloquently of the possible relations of the one to the other, shocks the scientific sense even of the most practiced theorist. But to connect the scientist with the original star dust, even through a long lapse of ages, by the progressive complications of a slowly developed thought of the living and loving God, is consistent with facts so far as we know them, with indications so far as we can interpret them, and above all with logic so far as we do homage to consistency of thought and speech—with that logic, without which science is a dream of mid-day, or a flashing vision of the night—either of which some men find it easy to make it, when intoxicated by the new wine of the biological philosophy.

The object of our criticism, upon the salient features and distinctive positions of the theory which is known by the name of evolution, has been to show, that a self-generated transmigration of substances and powers from lower to higher is inconsistent with scientific exactness and sound philosophy. The existence of a plan originating in the thought and developed by the agency of the thinker, by means of the forces and under the laws which he has created and imposed, explains all the analogies which give plausibility to mechanical evolution, and leave the amplest room for the severity and logic of scientific research.

It has been said very justly, that evolution has both directed and stimulated scientific discovery by suggesting analogies which had never been suspected, and connecting phenomena which had been regarded as holding no possible relations to one another. This is doubtless true; and it explains its ready reception by scientific men, who alone can appreciate the value of the resemblances which it suggests, and on this ground have given a ready, if not a credulous, assent to its philosophical incongruities. So soon as it is seen that these artificial lines of progressive evolution may become luminous with thought when projected against the bright background of the living God, the philosophy which it teaches and assumes may be another name for faith. The universe itself can never again become the dark and unexplored mystery which it once was. Now that science has analysed its substratum and determined its laws, and, above all, has deciphered its history, evolution has done much to enable us to conceive it as a thought or a plan which man may assume to comprehend, and interpret by its progressive history. To master this thought in its elements and its development is the problem of the scientist. It would seem to be more easy if not more necessary now than ever for him to recognize this thought which he seeks to grasp and to hold as having necessarily originated in another mind than his own. Man also is conceived as the culmination of the history of the universe hitherto, as the highest and most consummate of all its progressive movements. Why, then, may he not be worthy of the constant care and the fatherly love of Him who has had him in His thoughts from the beginning till now? and toward whom His plans and movements have ever been tending? Whatever evolution may teach or fail to teach, it cannot be said that its lessons inculcate or imply the insignificance of man. We have already adverted to the fact that evolution as a theory was taken from a home in which thought and spirit were supreme, and subjected to the thrall of mechanism and matter. Perhaps this fair captive who has been made to grind in the prison-house of the Philistines, may herself take the Philistines captive, and lead them back to the homes of the children of light.

Of agnosticism also, we need not think wholly evil. Agnosticism was first formulated by the caution and reverence of positive and earnest theists. We do not need to enquire whether Kant or Hamilton or Mansel had the most to do with shaping the doctrine of the unknown God whom Spencer contrives to superinduce upon his otherwise godless universe, and to locate beyond the domains of finite knowledge. Nor is it necessary that we ask whether or not their doctrines can square with their own philosophy, so long as it is certain that they accepted a supramundane intelligence whom man in some sense can know, even when they denied that he can be brought within the categories of completed definition and other finite limitations. Mr. Spencer, in seeking to qualify their denials by appealing to the common sense and feelings of mankind, has gone farther than they in his affirmations. In asserting that there is an Absolute necessarily unknowable, he has cut himself off from the liberty of denying personality and emotion and purpose in Him, whom he would still persist in calling the Great Unknown. He has formally and forever recognized faith as a necessary supplement to philosophy. In asserting that this a supramundane power or a Somewhat whom all must reverence and worship, he has conceded not only that man knows there is a God, but in some sense that he knows who and what He is.

The foregoing lecture was read before the Nineteenth Century Club, at the American Art Galleries, in New York City, on May 25, 1886, prefaced by some introductory words from the President of the Club, Mr. Courtlandt Palmer. The general subject of Evolution was further discussed by Professor Edward S. Morse, of the Peabody Institute, Salem, Mass., and Professor H. Newell Martin, of the Johns Hopkins University, Baltimore. These last-named gentlemen were reported, but in deference to their wishes their remarks (not previously written out) are not published.

Mr. Clarence Cook, writing in *The Studio*, of the new galleries of the American Art Association, 6 East Twenty-third Street, says: "They are spacious, well lighted, well ventilated, furnished in excellent taste, in a style of which the keynote is comfort; and it must be felt that the effect of the pictures is greatly enhanced by their setting; no picture here but looks its best, and he must be indeed an unreasonable person who finds his work ill-hung. The arrangement of the walls is such that no picture can by any chance be "skyed"; there are no dark corners—in short, we have here, for the first time in this country an almost ideal picture gallery. In the arrangement of the galleries, the architect, Mr. H. Edwards-Ficken, has had a difficult problem to deal with; to unite the practical conditions required for a series of rooms intended exclusively for the exhibition of pictures and statuary, with the ornamental and even luxurious character of a private house. Here we can walk about softly on the softest carpets, or sit in comfortable ease on cushioned seats, in a quiet which the roar of Broadway cannot break, and with nothing to prevent our tranquil enjoyment of whatever there is to enjoy. We cannot imagine a place of public resort where, if we were an artist, we would rather send our pictures for trial; for, here if anywhere, the heart of the critic would be softened to see whatever merit might be ours."

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J. J. Bergen, Brooklyn, N. Y	5,000	3,397	8,397
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John P. Howard, Englewood, N. J	5,000	8,229	13,229
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